

## CLAIMS

**[1]** A polarization integrator including a polarizing beam splitter for splitting light from a light source into P-polarized light and S-polarized light, a first micro-lens, a  $\frac{1}{2}$ -wave plate, and a second micro-lens, characterized in that:

said first micro-lens is arranged to focus onto mutually differing positions the P-polarized light and S-polarized light split by said polarizing beam splitter;

said  $\frac{1}{2}$ -wave plate is arranged either in the position in which the P-polarized light or in which the S-polarized light is focused, and operates to convert either the P-polarized light or the S-polarized light into S-polarized light or P-polarized light;

said second micro-lens operates to integrate either the S-polarized light or the P-polarized light having passed through said  $\frac{1}{2}$ -wave plate and been polarization-converted, with either the S-polarized light or P-polarized light not having passed through said  $\frac{1}{2}$ -wave plate; and

at least one of said polarizing beam splitter, said first micro-lens, said  $\frac{1}{2}$ -wave plate, and said second micro-lens is formed using a DLC film.

**[2]** A polarization integrator as set forth in claim 1, characterized in that at least one of either said polarizing beam splitter or said  $\frac{1}{2}$ -wave plate is formed by a refractive index-modulated diffraction grating formed in a DLC film.

**[3]** A polarization integrator as set forth in claims 1 or 2, characterized in that at least either said first micro-lens or said second micro-lens is either a refracting lens or a refractive index-modulated diffraction lens, formed in a DLC film.

**[4]** A polarization integrator as set forth in any of claims 1 through 3, characterized in that a plurality of groups each being of said polarizing beam splitter, said first micro-lens, said  $\frac{1}{2}$ -wave plate, and said second micro-lens are arrayed periodically within a sectional plane of the beam from said light source.

**[5]** A liquid crystal projector containing a polarization integrator as set forth in any of claims 1 through 4.